

through which the magnetic flux is channeled find support in the disclosure as originally filed, for example, at page 11, lines 30-32 and in Figs. 4-5.¹ Furthermore, a person of ordinary skill in the art would recognize from the disclosure as a whole that a median line is a line along which a magnetic flux is channeled and that the gaps are formed in the part of the circuit through which the magnetic flux is channeled.² The amendments to the claims are thus not believed to raise a question of new matter. In view of the amended claims, it is believed that all pending claims are definite and no further rejection on that basis is anticipated. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work with the Examiner in a joint effort to derive mutually acceptable language.

In order to vary the scope of protection recited in the claims, new Claims 17-19 are added. New Claims 17-19 find support in the disclosure as originally filed. Specifically, Claims 17 and 18 find non-limiting support at page 6, lines 1-2, and new Claim 19 finds non-limiting support at page 11, lines 10-14 with corresponding Fig. 4. Therefore, new Claims 17-19 are not believed to raise a question of new matter.³

¹See e.g., Vas-Cath In. v. Mahurkar, 935 F.2d 1555, 1565, 19 U.S.P.Q.2D 1111, 1118 (Fed. Cir. 1991) ("[D]rawings alone may provide a 'written description' of an invention as required by § 112"); and In Re Wolfensperger, 49 C.C.P.A. 1075, 1081, 302 F.2d 950, 955, 133 U.S.P.Q. 537, 542 (1962) (standing for the proposition that when drawings are relied upon to meet the written description requirement, the enquiry "is what the drawing in fact discloses to one skilled in the art").

²See e.g., In Re Hunter, 1995 U.S. App. LEXIS 15363 (Fed. Cir. 1995) ("When deciding . . . whether a disclosure satisfies the written description requirement with regard to a specific claim, it is proper to examine *the application as a whole* to decipher what it conveys to one of skilled in the pertinent art") (Emphasis added).

³See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter."

In response to the rejections of Claims 8-16 under 35 U.S.C. §102(b) and 35 U.S.C. §103(a), Applicants respectfully request reconsideration of these rejections in light of the amendments to the claims and the following remarks.

Briefly recapitulating, Applicants' invention relates to a process of increasing the operating frequency of a magnetic circuit (Claims 8-10), and to a magnetic circuit (Claims 11-14, 17-19). The claimed magnetic circuit can be used for example in inductive components, such as inductors, transformers, magnetic field sensors, magnetic heads, etc.⁴ The claimed invention includes a step of (means for) channeling a magnetic flux along a median line, and a step of forming (means including) gaps perpendicular to the median line and in a part of the magnetic circuit through which the magnetic flux is channeled. In one claimed embodiment (Claim 19), the magnetic circuit includes a toroid (see Fig. 4) so that the median line is a circle and the gaps are radial to the circle.

As explained in Applicants' specification at page 4, lines 18-25 and page 7, lines 18-29, Applicants' claimed invention lowers the magnetic permeability of the magnetic circuit. Advantageously, this reduction in magnetic permeability permits the magnetic circuit to operate at relatively higher frequencies so as to provide a broader range of operating frequencies for the magnetic circuit. In turn, this broader range permits the magnetic circuit to be used in applications that require high operating frequencies, such as integrated high frequency (HF) inductors (used in cellular phones), HF transformers, HF magnetic recording heads, etc.

On the other hand, the magnetic permeability in conventional magnetic circuits is often maximized to minimize losses.⁵ To that end, conventional magnetic circuits have a

⁴See Applicant's specification at page 1, line 10-17.

⁵See e.g. Applicants' specification at page 5, lines 7-10.

continuous structure, without interruptions or gaps. Applicants claimed invention thus "runs counter to these tendencies by advocating on the contrary a reduction in permeability."⁶

Turning now to the applied prior art, EPO 0 308 334 discloses a composite layer intended to absorb microwaves impinging thereon. However, EPO 0 308 334 fails to teach or suggest a magnetic circuit. More to the point, EPO 0 308 334 fails to teach or suggest channeling a magnetic flux along a median line and gaps perpendicular to the median line, as recited in Applicants' amended independent Claims 8 and 11. In EPO 0 308 334, no magnetic flux is channeled along a median line. The "longitudinal axis" of the composite layer of EPO 0 308 334 is not a median line along which a magnetic flux is channeled. Therefore, the electric isolating walls 8 of EPO 0 308 334 are not gaps perpendicular to a median line, along which a magnetic flux is channeled. Therefore, EPO 0 308 334 fails to teach or suggest every limitation recited in Applicants' Claims 11-12, as amended, so that Claims 11-12 are not believed to be anticipated by EPO 0 308 334.⁷

With respect to the non-obviousness of amended Claims 8-10 over EPO 0 308 334, there is no teaching, either explicit or inherent,⁸ nor suggestion in EPO 0 308 334 to channel a magnetic flux along a median line and to form gaps perpendicular to the median line.

⁶Applicants' specification at page 5, lines 21-22.

⁷See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

⁸See MPEP 2112: "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." (Citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)).

Therefore, Claims 8-10, as amended, are believed to be non-obvious over EPO 0 308 334.⁹ Furthermore, there is no evidence of record to support the position that, based on the teachings of EPO 0 308 334, a person of ordinary skill in the art would have found it obvious to form a magnetic circuit in which a magnetic flux is channeled along a median line and to form gaps perpendicular to the median line. In particular, there is no evidence of record that a person of ordinary skill in the art would have been motivated to make Applicants' claimed magnetic circuit using EPO 0 308 334's composite layer. On the contrary, the record (via Applicants' specification) supports the position that a person of ordinary skill in the art would have avoided forming gaps in a magnetic circuit so as to not lower the circuit's magnetic permeability.

In rejecting a claim under 35 U.S.C. §103(a), the USPTO must support its rejection by "substantial evidence" within the record.¹⁰ As discussed above, there is no substantial evidence within the record of motivation for modifying the EPO 0 308 334 composite layer to arrive at Applicants' claimed magnetic circuit or method for increasing the operating frequency of a magnetic circuit. Therefore, a person of ordinary skill in the art would not have been motivated and would not have found it obvious to perform the such modification, and Claims 8-10, as amended, are believed to be non-obvious and patentable over the applied prior art.

⁹See MPEP 2142 stating, as one of the three "basic criteria [that] must be met" in order to establish a *prima facie* case of obviousness, that "the prior art reference (or references when combined) must teach or suggest all the claim limitations," (emphasis added).

¹⁰*In re Gartside*, 203 F3d 1305, 53 USPQ2d 1769 (Fed. Cir. 2000) (holding that, consistent with the Administrative Procedure Act at 5 USC 706(e), the CAFC reviews the Board's decisions based on factfindings, such as 35 U.S.C. § 103(a) rejections, using the 'substantial evidence' standard because these decisions are confined to the factual record compiled by the Board.)

Turning now to the non-obviousness of amended Claims 13-16 over EPO 0 308 334 in view of Bhagat, Applicants respectfully submit that Claims 13-16 are non-obvious and patentable over this combination of reference, as next discussed. Bhagat discloses continuous magnetic circuits, which can be used to manufacture conductive strips in different layers. The conductive layers are joined so that they combine to form a helical path. A magnetic layer is placed between the conductive layers. The magnetic and the conductive layers are separated by insulating layers. However, these insulating layers are not perpendicular to the magnetic field. Instead, the insulating layers are parallel to the magnetic layer so that they do not interrupt the magnetic circuit and do not cut the magnetic field lines. Accordingly, the Bhagat teaches away from the present invention. Consequently, even if the combination of the applied references is assumed to be proper, the combination fails to teach every element of the invention, as claimed in amended Claims 13-16. Specifically, the combination of references fails to teach the means for channeling a magnetic flux along a median line and the gaps perpendicular to the median line, as recited in Applicants' amended independent Claim 11. Claims 13-16 are thus believed to be non-obvious and patentable over the applied prior art.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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IN THE CLAIMS

Please cancel Claims 15-16 without prejudice.

Please amend Claims 8-14 as follows:

--8. (Amended) A process for increasing the operating frequency of a magnetic circuit
[, characterized by the fact that it comprises] comprising the steps of:

channeling a magnetic flux along a median line; and

forming, in at least one part of [this] said magnetic circuit, gaps perpendicular to [the]
said median line [of the magnetic circuit],

wherein the step of channeling is performed so that said magnetic flux is channeled
through said at least one part.

9. (Amended). A process according to claim 8, [in which gaps are formed] wherein the
step of forming gaps comprises forming gaps in parallel planes.

10. (Amended) A process according to claim 8, [in which gaps are formed at regular
intervals] wherein the step of forming gaps comprises forming evenly-spaced gaps with a certain
pitch and a certain width.

11. (Amended) A magnetic circuit[, characterized by the fact that it has,] comprising:
means for channeling a magnetic flux along a median line; and
means for increasing the operating frequency of said magnetic circuit, said means for
increasing the operating frequency comprising [in at least one part of it,] gaps perpendicular to
[the] said median line [of the magnetic circuit] and formed in said means for channeling.

12. (Amended) A magnetic circuit according to claim 11, [in which the gaps are spaced at regular intervals] wherein said gaps are evenly-spaced.

13. (Amended) A magnetic circuit according to claim 11, [in which the part of the circuit having the gaps is formed by] wherein said means for channeling said magnetic flux comprises a single layer of magnetic material, said gaps being formed in said single layer.

14. (Amended) A magnetic circuit according to claim 11, [in which the part of the circuit having the gaps is formed by] wherein said means for channeling said magnetic flux comprises a stack of alternatively magnetic and insulating layers, said gaps being formed in said stack.--

Claim 15. (Canceled).

Claim 16. (Canceled)

Please add new Claims 17-19 as follows:

--17. (New) A magnetic circuit according to claim 13, wherein said gaps are evenly-spaced.

18. (New) A magnetic circuit according to claim 14, wherein said gaps are evenly-spaced.

19. (New) A magnetic circuit according to claim 11, wherein:

said means for channeling said magnetic flux along said median line comprises a toroid,

said median line is a circle, and

said gaps are radial to said circle.--